Bindarit, an inhibitor of monocyte chemotactic proteins (MCPs) production, reduces restenosis in a porcine coronary stent model

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INTRODUCTION

Bindarit is an original compound with anti-inflammatory activity due to a selective inhibition of a subfamily of CC inflammatory chemokines, including MCP-1/CCL2, MCP-3/CCL7 and MCP-2/CCL8 [1]. Phase II trials have shown that bindarit was well tolerated and significantly reduced urinary MCP-1 and albumin excretion in kidney disease [2, 3]. Previous results have demonstrated that bindarit attenuates neointimal formation in rat balloon angioplasty and wire-induced injury in ApoE⁻/⁻ mice by inhibiting vascular smooth muscle cell (SMC) proliferation and migration and reducing macrophage content in neointima, effects associated with the inhibition of MCP-1/CCL2 production [4].

AIM

In the current study, we investigated the effect of bindarit on in-stent restenosis in a porcine coronary stent model.

METHODS

Stent implantation

The porcine coronary models using injuries caused by stenting is now accepted standard by which potential restenosis therapies are studied, in large part because the stages of restenosis intra-stent 28 days after stent deployment.

Morphometric analysis

Sections were analyzed by computed morphometry. The cross sectional areas of the lumen, neointima, media, and whole vessel were recorded. Neointimal thicknesses (defined as the minimum distance between the strut and the lumen) were also measured. The injury and the inflammatory score were also calculated as previously described by Gunn et al. [6] and Kornowski et al. [7], respectively. The injury score, the inflammatory score and the neointimal thicknesses were determined at each strut site, and mean injury scores and neointimal responses were calculated for each stented coronary segment.

RESULTS

Table 1. Coronary Artery Morphometric Measurements

<table>
<thead>
<tr>
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<th>Control</th>
<th>Bindarit</th>
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<tbody>
<tr>
<td>Lumen area (mm²)</td>
<td>4.12±0.21</td>
<td>3.90±0.15</td>
</tr>
<tr>
<td>Media area (mm²)</td>
<td>1.83±0.11</td>
<td>1.70±0.12</td>
</tr>
<tr>
<td>Vessel area (mm²)</td>
<td>6.95±0.39</td>
<td>6.75±0.34</td>
</tr>
<tr>
<td>Neointimal area (mm²)</td>
<td>2.01±0.14</td>
<td>1.72±0.13</td>
</tr>
<tr>
<td>Neointimal thickness (µm)</td>
<td>270.19±26.92</td>
<td>228.63±20.57</td>
</tr>
<tr>
<td>Area stenosis (%)</td>
<td>11.50±1.01</td>
<td>11.05±0.85</td>
</tr>
<tr>
<td>Injury score</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Inflammatory score</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
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CONCLUSION

Our results show the efficacy of bindarit in the prevention of in-stent restenosis and offer a clue for its potential clinical application.

REFERENCES
